IN THE CLAIMS

Please cancel the pending claims and substitute the following claim set:

18. (Currently amended) A method for monitoring of and fault detection in a process chain in an industrial process, said industrial process comprising at least a first sub-process, {Step 12, 23, 72_{x7}} having first variables, $\{X_2\}_x$ and at least one second sub-process, {Step11, 21, 22, 71, 73_{x7}} having second variables, $\{X_1\}_x$ arranged in a process chain, said first sub-process being performed after said second sub-process in said process chain, said method comprises the steps of:

collecting data including said second variables and calculating a multivariate sub-model based on said collected data comprising weighted averages, {t11, t12, t41, t42, t5, t7, t8, $t9_{x7}$} for said second variables for the at least one second sub-process, {Step11, 21, 22, 71, 73};

receiving in the first sub-process, {Step 12, 23, 72_{x7}} from the at least second sub-process, {Step11, 21, 22, 71, 73_{x7}} said weighted averages, {t11, t12, t41, t42, t5, t7, t8, t9};

collecting data including said first variables related to the first sub-process, {Step 12, 23, 72}; and

calculating a multivariate sub-model for the first sub-process, {Step 12, 23, 72_{x7}} based on said collected data including said first variables and said weighted averages, {t11, t12, t41, t42, t5, t7, t8, t9}.

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19. (Currently amended) A method according to claim 18, **characterized** by the step of transmitting information or data related to the multivariate sub-model calculated for the first sub-process$_x$ {Step 12, 23, 72$_x$} to a third sub-process$_x$ {Step 13, 74}.

20. (Currently amended) A method according to claim 18, **characterized** by the step of performing information or data feedback from the first sub-process$_x$ {Step 12, 23, 72$_x$} to the at least one second sub-process$_x$ {Step11, 21, 22, 71, 73}.

21. (Previously presented) A method according to claim 18, **characterized** in that the data collected for each sub-process comprises process data.

22. (Currently amended) A method according to claim 18, **characterized** in that the step of transferring information received comprises sequential transferring of quality parameters by means of multivariate sub-model score values$_x$ {t1,t2,...,tn$_x$} between the sub-processes in the process chain.

23. (Currently amended) A method according to claim 18, **characterized** in that arranging the collected data for the first sub-process $_x$ {Step 12, 23, 72$_x$} in one matrix and calculating the sub-model for the first sub-process$_x$ {Step 12, 23, 72$_x$} using a principal component analysis like method.

24. (Currently amended) A method according to claim 18, **characterized** in that arranging the collected data for the first sub-process, {Step 12, 23, 72) is in a first, {X_1} and a second, {Y_1} matrix and calculating the sub-model for the first sub-process, {Step 12, 23, 72_1} using a PLS like method.

25. (Currently amended) A method according to claim 24, **characterized** by first matrix, {X) comprises process data and the second matrix, {Y_1} comprises quality data.

26. (Currently amended) A method according to claim 1, **characterized** by defining at least one plot, such as score plots, residual plots, residual standard deviation, {$DmodX_1$} plots, contribution plots, or scaled raw data plots for the interpreting the models and occurring process faults.

27. (Previously presented) A method according to claim 26, **characterized** in that outlier detection is provided by analysis of said at least one plot.

28. (Previously presented) A method according to claim 18, **characterized** by using a number of multivariate sub-model observations comprising a prediction set to simulate the process chain.

29. (Previously presented) A method according to claim 18, **characterized** by using a number of multivariate sub-model observations comprising a prediction set to perform on-line monitoring in the process chain.

30. (Currently amended) A first apparatus for monitoring of and fault detection in a process chain in an industrial process employing multivariate data methods, said first apparatus comprising calculating means for calculating a first multivariate sub-model for a first sub-process$_n$ {Step 12, 23, 72}, wherein said first apparatus comprises means for receiving from at least a second apparatus information or data related to at least a second multivariate sub-model on said collected data comprising weighted averages$_n$ {t11, t12, t41, t42, t5, t7, t8, t9$_{x7}$} for said second variables calculated for at least a second sub-process$_n$ {Step11, 21, 22, 71, 73$_{x7}$} in said industrial process and that said calculating means is arranged to calculate the first multivariate sub-model based on the information or data received from said apparatus and said second sub-process$_n$ {Step11, 21, 22, 71, 73}.

31. (Previously presented) A first apparatus according claim 30, **characterized** in that it comprises means for transmitting information or data to a third apparatus.

32. (Previously presented) An apparatus according to claim 30, **characterized** by means for performing information or data feedback to the second apparatus.

33. (Previously presented) A computer program product comprising computer readable code means which, when run on a computer system, makes the computer system perform the steps according to claim 18.

34. (Currently amended) A computer program product according to claim 33 comprising computer readable code means which, when run on a computer system, makes the computer system perform the following additional step:

- transmitting relevant information or data to a third sub-process, {Step 13, 74}.